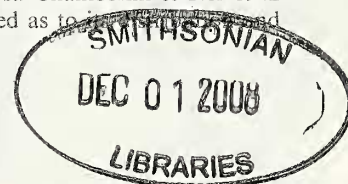


## A redescription of *Varacosa apothetica* (Wallace) (Araneae, Lycosidae)

**Jamin M. Dreyer:** Department of Biology, Hope College Holland, Michigan 49423, USA. E-mail: dreyerj@hope.edu

**Abstract.** *Lycosa apothetica* Wallace 1947 is redescribed as a member of the genus *Varacosa* Chamberlin & Ivie 1942 based on genitalic morphology. The species is freshly illustrated, and information is provided as to its life history and interesting characteristics.

**Keywords:** *Lycosa*, *Trochosa*, Florida spiders



Like many newly described members of the family Lycosidae Sundevall 1833 from the mid-20<sup>th</sup> century, *Lycosa apothetica* Wallace 1947 was originally described in the genus *Lycosa* Latreille 1804. Roewer (1955) placed the species in *Varacosa* Chamberlin & Ivie 1942 when he elevated this genus from its subgeneric status within *Trochosa* C.L. Koch 1847, but his reasons for doing so were not made clear. *Varacosa apothetica* was not part of Brady's (1980) *Trochosa avara* group nor was it treated as a member of *Varacosa* by Jiménez & Dondale (1988). Platnick (2008) therefore placed *V. apothetica* within *Trochosa* along with the rest of Roewer's *Varacosa* not included by Jiménez & Dondale (1988). Based on Wallace's illustrations (1947), it seemed likely that the species belonged to *Varacosa*. Wallace (1947) examined a total of 57 specimens from the Southeastern United States (8♂♂, 49♀♀) in his original description. Having examined most of the type material, I here support Roewer's (1955) combination *Varacosa apothetica* by showing that the species bears a prominent synapomorphy of *Varacosa*; i.e., the conspicuous anterior curvature of the transverse piece of the epigynum.

### METHODS

Descriptions and drawings are based on specimens viewed in 70–75% ethanol under direct illumination. The epigynum was removed and cleared with clove oil, and the spermathecae were illustrated within this liquid. For clarity, palpal setae were omitted. Measurements reported here are those found in Wallace's (1947) original description of the species. Figure 8 reflects the collection localities of the specimens examined here as well as those included in Wallace (1947) that could not be located.

**Abbreviations.**—Male palpal structures: palea region (pr), tegular lobe (tl), embolus (emb), terminal apophysis (ta), median apophysis (ma), tegulum (tg). Female genitalic structures: head of spermathecae (hs), stalk of spermathecae (ss), fertilization ducts (fd). Body Dimensions: carapace width (CW), carapace length (CL), Eyes: posterior ocular quadrangle width (POQW), posterior ocular quadrangle length (POQL), posterior median eye width (PMEW), posterior lateral eye width (PLEW), clypeus height (CH). Palpal segments: palpal femur (PF), palpal patella (PP), palpal tibia (PT), palpal cymbium ♂ (PC), palpal tarsus & claw ♀ (PTC). Legs: femur (F1–4), patella (P1–4), tibia (T1–4), metatarsus (M1–4), tarsus (T1–4). Collections: American Museum of Natural History, New York (AMNH); Florida State Collection of Arthropods, Gainesville (FSCA).

### TAXONOMY

Family Lycosidae Sundevall 1833  
Genus *Varacosa* Chamberlin & Ivie 1942

*Trochosa* C.L. Koch 1848:95, in part. Brady 1980:168, in part. Platnick 2008, in part.

*Trochosa* (*Varacosa*) Chamberlin and Ivie 1942:36.

*Varacosa*: Roewer 1955:304. (Raised to generic status).

Jiménez & Dondale 1988:172.

**Type species.**—*Trochosa avara* Keyserling 1877, by original designation.

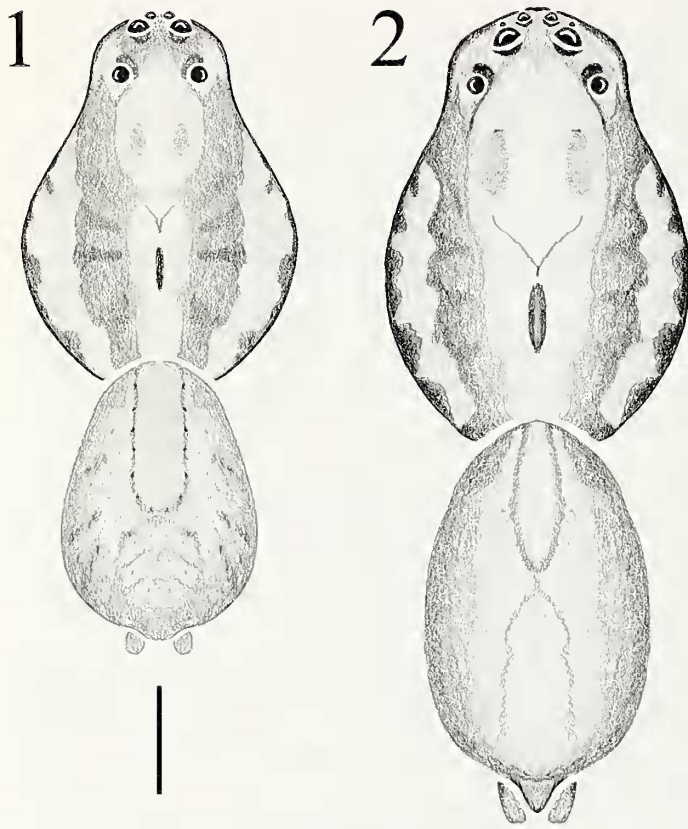
*Varacosa apothetica* (Wallace 1947)

Figures 1–7

*Lycosa apothetica* Wallace 1947:33, figs. 1, 2.

*Varacosa apothetica* Roewer 1955:306.

**Type material examined.**—*Varacosa apothetica*: allotype ♂ USA: Florida: Alachua County: 29°39'N, 082°19'W, 26 October 1937, H.K. Wallace (AMNH); *Lycosa apothetica*: holotype ♀ USA: Florida: Alachua County: Station 7B, 29°39'N, 082°19'W, 26 October 1937, H.K. Wallace (AMNH). Paratypes: U.S.A.: Florida: 2♀ Alachua County, Station 1, 29°39'N, 082°19'W, 19 January 1937, H.K. Wallace (FSCA); 1♀ same location, 29°39'N, 082°19'W, 30 January 1937 (FSCA); 2♀ Alachua County, Station 1B, 29°39'N, 082°19'W, 30 January 1937, H.K. Wallace (FSCA); 5♀ Alachua County, Station 1 vicinity, 29°39'N, 082°19'W, 30 January 1937 (FSCA); 2♀ same location, 29°39'N, 082°19'W, 19 April 1937 (FSCA); 1♀ same location, 29°39'N, 082°19'W, 22 January 1939, H.K. Wallace (FSCA); 2♀ Alachua County, Station 2 vicinity, 29°39'N, 082°19'W, 30 January 1937, H.K. Wallace (FSCA); 2♀ Alachua County: Station 7A, 29°39'N, 082°19'W, 7 February 1937 (FSCA); 2♀ Alachua County, Station 7B, 29°39'N, 082°19'W, 20 January 1937 (FSCA); 3♀ same location, 29°39'N, 082°19'W, 8 February 1937 (FSCA); 1♂♀ same location, 29°39'N, 082°19'W, 26 May 1937 (FSCA); 1♀ Alachua County: Gainesville, 29°39'N, 082°19'W, 18 March 1938, W.J. Gertsch (FSCA); 1♂ Alachua County: pine flatwoods, 29°39'N, 082°19'W, 2 July 1938, C. Benton (FSCA); 1♀ Alachua County, 29°39'N, 082°19'W, 11 April 1933, H.K. Wallace (FSCA); 4♀ Alachua County, 29°39'N, 082°19'W, 15 February 1938, H.K. Wallace (FSCA); 3♀ Leon County, 30°26'N, 084°16'W, 16 March 1936, H.K. Wallace (FSCA). Georgia: 1♀ Turner County, 31°42'N, 083°39'W, 6 May 1937, H.K. Wallace (FSCA); No Locality:



Figures 1, 2.—Dorsal view of carapace and abdomen: 1. *Varacosa apothetica*, allotype male from Florida, USA; 2. *Lycosa apothetica* holotype female from Florida, USA. Scale = 1 mm

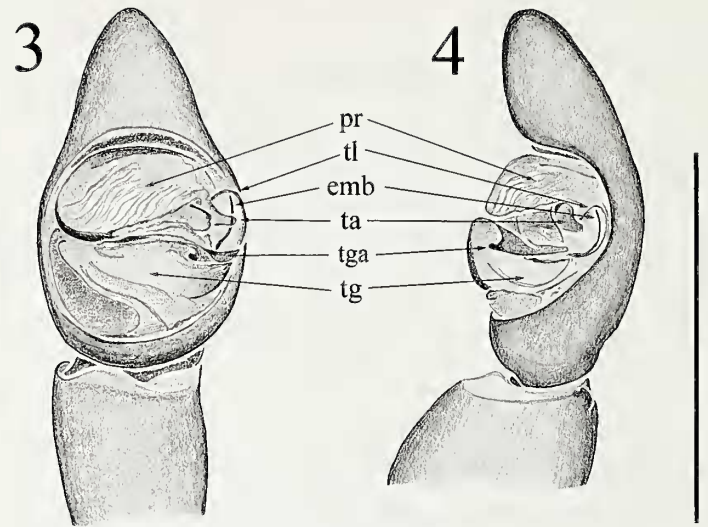
8♀, H.K. Wallace (FSCA). *Mississippi*: 1♂2♀ Hancock County, 42 mi East of New Orleans, 30°18'N, 089°20'W, 15 July 1939, H.K. Wallace (FSCA).

**Other material examined.**—USA: *Alabama*: 2♀ Baldwin County: Foley, 30°24'N, 087°41'W, 25 June 1912 (FSCA). *Florida*: 1♀ Alachua County, 29°39'N, 082°19'W, 26 January 1958, H.V. Weems Jr. (FSCA).

**Etymology.**—Wallace did not comment on etymology. However, *apothetica* is presumably derived from a Greek word meaning storehouse, and could refer to the Devil's Mill Hopper near the type collection locality (Dondale, pers. comm. 2007).

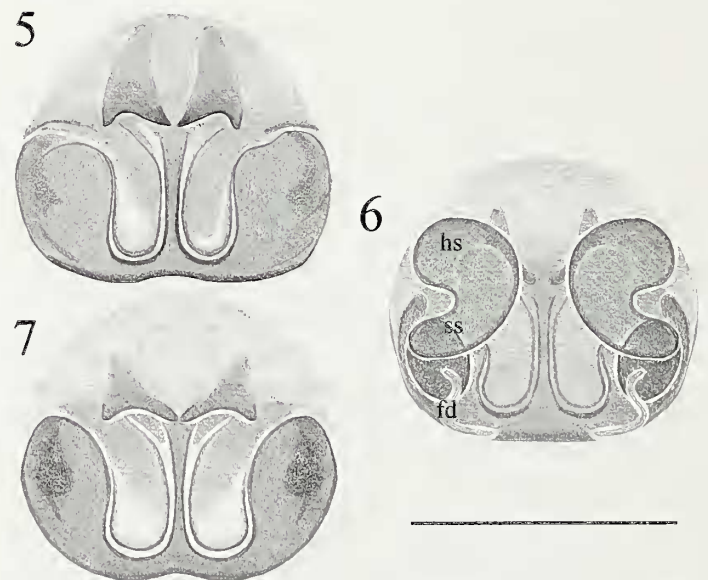
**Diagnosis.**—Males of *V. apothetica* are distinguished from other members of this genus by the large palea, which lacks sclerotization, a transparent terminal apophysis superior to the tegular lobe, and the relatively small tegular apophysis (Figs. 3, 4). Females are separated from their congeners by the anteriorly widened curved portion of the transverse piece of the median septum, each being about one-third the width of the entire epigynum (Figs. 5, 7).

**Description.**—*Male*: Chelicerae: light tan; without strong boss; three promarginal and retromarginal teeth. Carapace (Fig. 1): light yellow background with medium brown markings; median light stripe extending from between eyes to rear of carapace containing two darkened areas posterior to PLEs; submarginal light bands; wavy dark margins; few dark brown radial lines running from median light area to submarginal light area; darkened region surrounding ALEs and PER; AER slightly procurved; eyes and anterior portion



Figures 3, 4.—*Varacosa apothetica* allotype male from Alachua County, Florida, USA: 3. Ventral aspect of palpus; 4. Retrolateral aspect of same. pr = palea region; tl = tegular lobe; emb = embolus; ta = terminal apophysis; tga = tegular apophysis; tg = tegulum. Scale = 1 mm

of carapace lightly iridescent. Dorsum of abdomen: light yellow background, uniformly mottled medium grey; heart mark may be present, if so not strongly outlined; weak chevrons if any; darker anteriorly. Legs: femora annulate; ventral surface of femur iridescent, perhaps even the entire leg; leg formula IV:I:II:III. Endites and labium: light yellow overall, darker proximally; labium nearly square. Sternum: yellow; bare but for disparate long setae. Venter: yellow; low numbers of small dark spots near the margins. Pedipalpus (Figs. 3, 4): large, wrinkled palea; tegular apophysis with strong sclerotization on dorsal tip; slightly curved embolus lying in distally elongated tegular lobe; transparent terminal



Figures 5–7.—5. Ventral aspect of epigynum, *Lycosa apothetica*, holotype female from Alachua County, Florida, USA. 6, 7. *Varacosa apothetica* paratype female from Alachua County, Florida, USA: 6. Internal genitalia; 7. Epigynum of same. hs = head of spermathecae; ss = stalk of spermathecae; fd = fertilization ducts. Scale = 0.5 mm

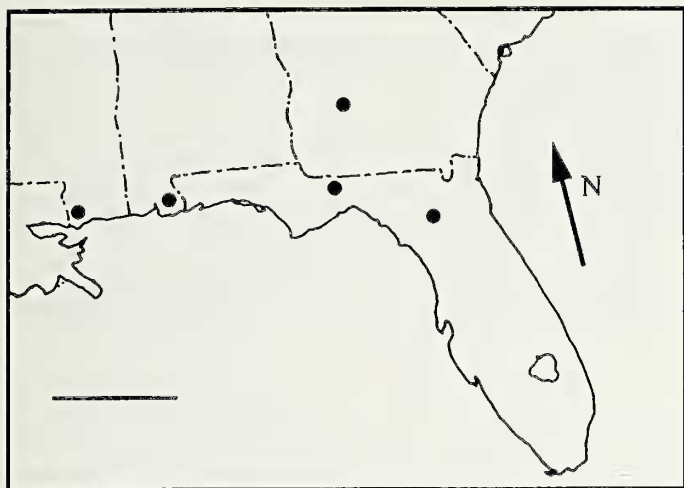


Figure 8.—Map of *Varacosa apothetica* collection locality records, Southeastern United States. Scale = 150 mi/240 km

apophysis protruding from palea over the conductor and embolus when viewed dorsally; tegulum devoid of major topography or sclerotization; no macrosetae on tip.

**Female:** similar to male. Carapace (Fig. 2); Epigynum (Figs. 5, 7): Thin median septum; thin transverse piece, except for heavily thickened anterior lobes, each nearly one-third the width of the epigynum; deep excavations along margin of median septum and transverse piece; median septum and transverse piece sclerotized; hoods triangular; whole of epigynum nearly circular. Spermathecae (Fig. 6): Large spermathecae extending anteriorly from lateral position; stalk of spermathecae angled toward top of median septum before bending  $> 90^\circ$  and widening into head of spermathecae; fertilization ducts appear suspended above darkened structure posterior to spermathecae when viewed from within.

**Measurements.**—Wallace's original measurements (1947) for both the male and female are again reported here in Table 1.

**Distribution and habitat preferences.**—Wallace's records (1947) indicate that this species is found only in the southeastern USA, from Florida and Georgia west to Mississippi (Figure 8). Most specimens have been collected in Gainesville, Florida. Wallace (1947) reports that "Males have been collected only in October, November, December, and February while females have not been taken after May until October." It is "secretive," "usually stays close by, or in, the mouth of it's [sic] retreat" and is "usually found in moist situations in pine flatwoods (pond margins, cypress bay margins, etc.), but may be found occasionally in other situation [sic]" (Wallace 1947).

**Remarks.**—Wallace (1947) lists 57 paratypes in his original description. I examined the majority of those, and three additional specimens collected later. This species bears a synapomorphy with *Varacosa*: the conspicuous anterior curvatures of the transverse piece. I therefore support Roewer's combination: *Varacosa apothetica* (Wallace 1947), contra Platnick (2008). In *V. apothetica* these structures are much wider than those of other *Varacosa*. Of its congeners, the *V. apothetica* epigynum most closely resemble *V. gosiuta* (Chamberlin 1908) and *V. shenandoa* (Chamberlin & Ivie 1942) (Brady 1980). The palp of the male differs from most

Table 1.—Features of *V. apothetica* (Wallace), taken from Wallace (1947). All measurements in millimeters. See text for abbreviations.

Dimension	<i>V. apothetica</i> ♂	<i>V. apothetica</i> ♀
CW	2.5	2.9
CL	3.5	4.0
POQW	1.0	1.4
POQL	0.8	1.0
PMEW	0.4	0.4
PLEW	0.3	0.3
CH	0.6	0.6
PF	1.3	1.4
PP	0.6	0.7
PT	0.6	0.8
PC/PTC	1.0	1.2
F1	2.7	3.9
P1	1.4	1.5
T1	2.3	2.2
M1	2.3	2.0
T1	1.5	1.5
Total 1	10.2	11.1
F2	2.4	2.7
P2	1.3	1.5
T2	2.0	2.0
M2	2.1	2.0
T2	1.5	1.5
Total 2	9.3	9.7
F3	2.4	2.6
P3	1.2	1.3
T3	1.7	1.8
M3	2.3	2.2
T3	1.3	1.5
Total 3	8.9	9.4
F4	3.1	3.3
P4	1.2	1.6
T4	2.5	2.8
M4	3.3	3.7
T4	1.8	1.9
Total 4	11.9	13.3

other *Varacosa*, featuring a large palea and relatively small median apophysis similar to that of *V. hoffmannae* Jiménez & Dondale 1988.

One notable feature of this species is the iridescent quality noted on the body of the males. Male specimens exhibited varying levels of iridescence over their bodies, but each was found to have femora that bore this quality. It is not clear if this is an artifact of the long term preservation of these specimens or a true characteristic of the species.

#### ACKNOWLEDGMENTS

I wish to thank the following individuals for their contribution to this work: Allen R. Brady and Charles D. Dondale for their identification of this project and helpful encouragement; Norman I. Platnick (AMNH) and G.B. Edwards (FSCA) for the loan of specimens; Lou Sorkin (AMNH) for his assistance with material; C.D. Dondale and Thomas L. Bultman for reading an early version of the manuscript; Dr. Volker Framenau, an anonymous reviewer, and Dr. Ingi Agnarsson for their helpful critiques during the review process; Sarah C. Crews for her suggestions in relation to the illustrations; and the Hope College Department of

Biology, particularly the Chair T.L. Bultman, for support of this research.

#### LITERATURE CITED

- Brady, A.R. 1980. Nearctic species of the wolf spider genus *Trochosa* (Araneae: Lycosidae). *Psyche* 86:167–212.
- Chamberlin, R.V. & W. Ivie. 1942. A hundred new species of American spiders. *Bulletin of the University of Utah* 32:1–117.
- Jiménez, M.L. & C.D. Dondale. 1988. Descripción de una nueva especie del género *Varacosa* de México. *Journal of Arachnology* 15:171–175.
- Platnick, N.I. 2008. The World Spider Catalog, Version 8.0. The American Museum of Natural History, New York. Online at <http://research.amnh.org/entomology/spiders/catalog/>. Accessed 16 January 2008.
- Roewer, C.F. 1955. Katalog der Araneen von 1758 bis 1940, bzw. 1954. Volume 2. Institut Royal des Sciences Naturelles de Belgique, Bruxelles. 923 pp.
- Wallace, H.K. 1947. A new wolf spider from Florida, with notes on other species. *Florida Entomologist* 30:33–42.

*Manuscript received 25 November 2007, revised 10 February 2008.*